

2010 Fall AGU meeting, December 12-17, San Francisco, CA

Title: A perspective of the science and mission challenges in aeronomy

Abstract: There are significant fundamental problems for which aeronomy can provide solutions and a critical role in applied science and space weather that only aeronomy can address. Examples of unresolved problems include the interaction of neutral and charged, the role of mass and energy transfer across Earth's interface with space, and the predictability of ionospheric density and composition variability. These and other problems impact the productivity of space assets and thus have a tangible applied dimension. This talk will explore open science problems and barriers to potential mission solutions in an era of constrained resources.

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A PERSPECTIVE OF
THE SCIENCE AND
MISSION
CHALLENGES IN
AERONOMY

JAMES SPANN/NASA MSFC
2010 FALL AGU MEETING
DECEMBER 17, 2010

CONTEXT

- ✻ There are few new aeronomy missions on the horizon
- ✻ Access to space is becoming more expensive and difficult
- ✻ The Nation's economy is under duress
- ✻ Aeronomy is a 'mature' discipline - it is not so much exploratory as it is explanatory
- ✻ However, aeronomy is extremely relevant to National needs and societal evolution - it has never been more relevant

MISSION OPTIONS

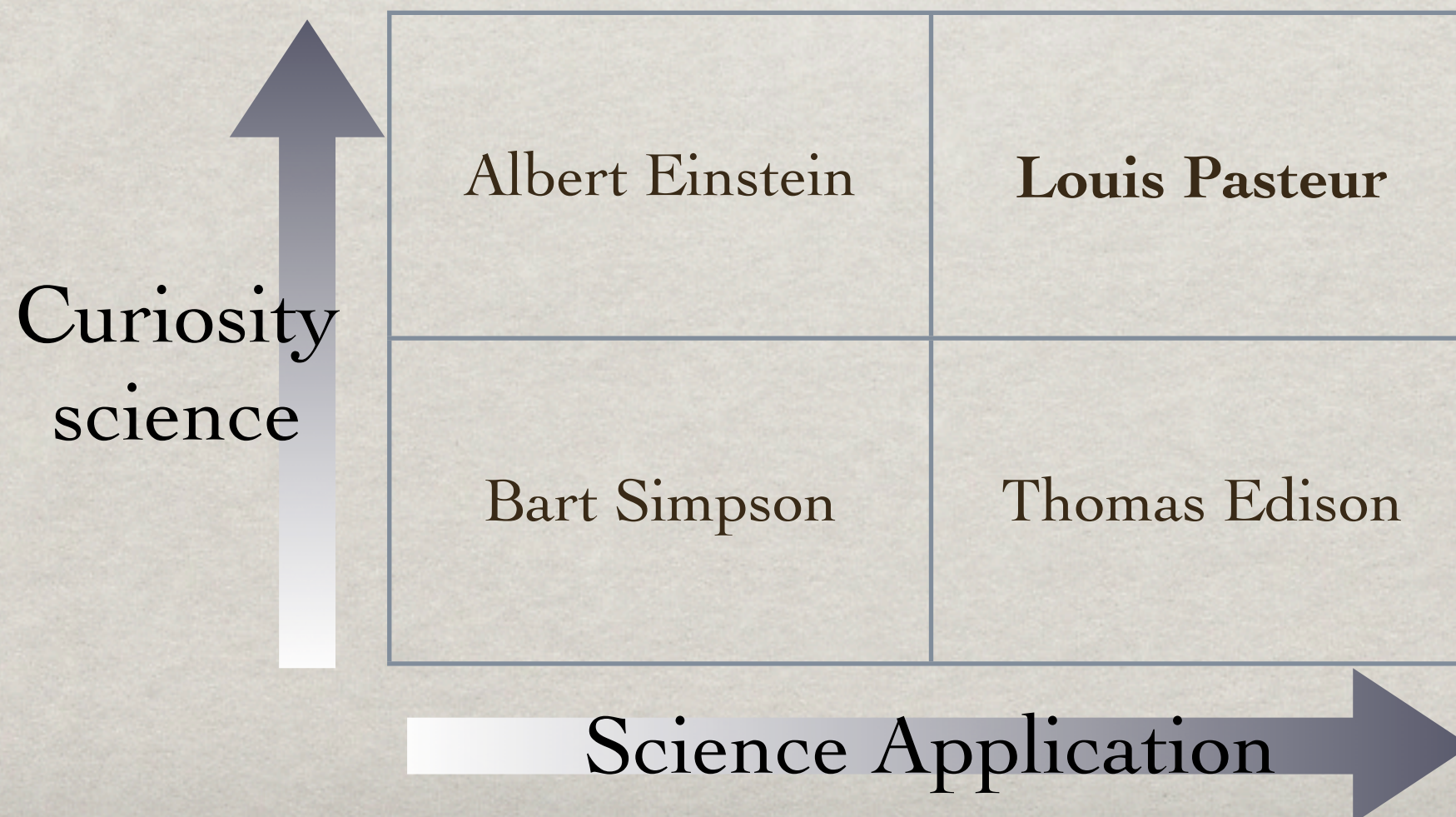
- ✱ NSF - cube sats, ground based, theory/modeling
- ✱ NOAA - applications
- ✱ DoD - SERB missions, applications
- ✱ NASA - Explorer, STP, LWS, Planetary, theory/
modeling
- ✱ Commercial
- ✱ International partnerships

SCIENCE GOALS

- ✻ System Science - highlight role of aeronomy in the Heliophysics system
- ✻ Fundamental Science - Address foundational science questions that are not resolved
- ✻ Applied Science - Address societal and national needs

GOAL

- ✻ Looking for the “**sweet spot**” - to resurrect George Withbro’s analogy of Pasteur mode where it is the best of the Einstein and Edison modes, and never the Bart Simpson mode



STRATEGY OPTIONS

- ✻ Dedicated Large Mission
- ✻ Multiple Independent Missions
- ✻ Distributed Assets

WAY FORWARD

- ✻ Community needs to have agreement on overall goal and then focus on strategy
- ✻ Stay the course on science focus, do not waiver
- ✻ Work/Support broader discipline efforts
- ✻ Have patience with funding sources - these are difficult times -
- ✻ Be part of the solution, not the problem - does not mean to be quiet and still - but constructively active and vocal

